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STANDARD GASOLINE OCTAMES BOOSTED

B. P. Kitskiy

The new automobile engines with 6.0-6.2:1 compression ratio and up to 23.6 horsepower per liter power require better-quality gasolines.

Effective as of 1 January 1949 a new All-Unio. CasolineStandard (COST 2084-48) was adopted, which provides that the high-octane gasoline, previously produced under GOST 2084-46, is to be standardized d its fractional compound lightened.

Three types of gasoline, A66, A70, and A74, are established by the new standard: their octanes are, respectively, 66, 70, and 74. In first two types can be standard, and the content of P-9 shall liquid can reach as high as 1.5 millifites per kilogram of gasoline. Previously the octane was not standardized and varied within the range of 54 - 62; its increase up to 66 and 70 is made and varied within the range of 54 - 62; its increase up to 66 and 70 is made possible by ethylation and lightening of the fractional compound. This makes it possible to take full advantage of the operating economy of the new increased compression engines and to raise the efficienc, of the old types (GAZ-MM and ZIS-5).

The fractional compound of Types A66 and A70 is made lighter than that of the previous types by reducing the 10-percent evaporation temperature 60 degrees, the 50-percent evaporation temperature 5 degrees, and the 90-percent evaporation temperature 15 degrees. The boiling point is lowered 20 degrees.

The increased light fractions content in gasoline improves its starting properties, while the reduction of the heavy fractions increases the economy of operation and the longevity of engines.

Type A74 gasoline is nonethylated and differs little from the special autogasoline produced under the GOST 3296-46 specifications.

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The mein physical and chemical properties of the new types of gasoline (GOST 2084-48) are shown in the table below.

Physical and Chemical Properties	<u>A66</u>	<u>A70</u>	<u>A74</u>
Octane number not lower than	66	70	74
Content in milliliters per kilogram of gasoline of P-9 ethyl liquid, not lower than	1.5	1.5	none
Fractional Compound			
a. Initial distillation temperature in degrees centigrade not lower than			. 35
b. 10 percent distilled at temperature not higher than	79	70	70
c. 50 percent distilled at temperature not higher than	145	145	105
d. 90 percent distilled at temperature not higher than	195	195	165
e. End of shullition at temperature not higher than	2 05	205	180
f. Residue in retort, in percent, not larger than	1.5	1.5	1.5
g. Residue and losses, in percent, total not larger than	4.5	կ.5	2.5
Vapor tension (Reyd scale) in mm of mercury, not over	500	500	500
Achiai tar content in 100 milliliters of gas, in milligrams Induction phase in minutes, not over Sulfur content in percent, not over	10 240 0.15	10 240 0.15	6 600 0.1
partiti content to become, not over	0.27		

Remar) s

- 1. From October to February, production of Types A66 and A70 with a vapor tension not over 600 will be tolerated.
- 2. In Types A66 and A7C obtained from sulfurcus retroleum, & sulfur content up to 0.6 percent and will be telerated.
- 3. At consumer delivery points, (gas stations, etc.), the following modifications are tolerated for Types A66 and A70: an increase of the actual tar content up to 25 milligrams per 100 milliliters of petroleum; a one-degree increase of the 10-percent distillation temperature; a 2-degree increase of the intermediate distillation temperature; a 3-degree increase of the boiling temperature; and a 0.3-degree increase of residue in the retort.

The use of ethylated gasoline in transportation requires caution, circe the ethyl liquid, even in spell quantities, is a poison which, introduced in the human organism through the respiratory system and the integument, causes disturbances in the nervous system and even poisoning. Therefore, auto plants must provide herestically scaled fuel systems to exclude the possibility of leakage from carburators, fuel pumps, and lines. Scientific research institutes must solve the important problem of replacing tetraethyl of lead with a new, nontoxic and anti-knock compound.

The use of high octane gasoline demands a modernization of the old types of engines. To make their operation more economical, their compression must be increased, the shape of the combustion chamber modified, and the angle of spark advance changed.

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The improvements achieved must not be considered final. Petroleum refineries must ensure further improvement of the quality of gasoline by making the fractional compounds lighter, lowering the sulfur content, and increasing the physical and chemical stability. They must also organize the production of seasonal and zonal types or gasoline.

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